

specification states "tar or pitch having 3% or less...of primary QI [is] produced by removing at least part of primary QI which exists in [the] raw material".

Applicants agree with the Examiner that unprocessed tar from coal and pitch from coal will have more than 3% primary QI. However, tar from petroleum and pitch from petroleum typically does have less than 3% primary QI. Therefore, when using tar or pitch from coal, it typically is necessary to process tar or pitch from coal in order to have the claimed primary QI percentage.

Accordingly, Applicants have amended the claims to now more clearly recite that if tar or pitch from coal is used as the starting material, the tar or pitch from coal is processed. Alternatively, if tar or pitch from petroleum is used, no processing is necessary to have the claimed 3% or less primary QI. Regardless of the starting material, the starting material has a primary QI of 3% or less.

It should be noted that the specification refers to "coal heavy oil" to mean tar from coal and pitch from coal, not petroleum heavy oil (see present specification, page 18, lines 2-5). Since petroleum heavy oil usually has a primary QI of less than 3%, no processing is necessary. Therefore, a starting material of tar and pitch from petroleum does not need to be processed to be used in the claimed invention.

To provide additional information with regard to the manufacturing of the claimed coated material, which in no way limits the scope of the claimed invention, reference is made to the following exemplar manufacturing method.

There are five stages from starting material to coat-forming (formerly "raw") carbon material:

(i) starting material: tar from coal or pitch, either from coal or petroleum, having a primary QI of more than 3% (from coal) and less than 3% (from petroleum) and a toluene insoluble matter of probably 7.8% to 30%.

↓ processing

(ii) tar or pitch having a primary QI of 3% or less and a toluene insoluble matter of 7.8% to 30%.

↓ immersion or dipping

(iii) tar or pitch deposited on a core carbon material, said tar or pitch having a primary QI of 3% or less and a toluene insoluble matter of 7.8% to 30%.

↓ washing with toluene

(iv) tar or pitch deposited on a core carbon material having a primary QI of 3% or less and no or substantially no toluene insoluble matter.

↓ washing with toluene

(v) calcined tar or pitch to form a coat forming carbon material.

Since ingredients of tar or pitch will be chemically modified by calcinations, determination of a primary QI and a toluene insoluble matter after calcinations does not make sense and therefore not possible to make. Therefore, one cannot specify a primary QI and toluene insoluble matter with respect to a coat forming carbon material which is a final form (calcined).

It also should be noted that tar or pitch is changed by processing (primary QI), washing (toluene insoluble matter) and calcination (tar or pitch itself including primary QI and toluene insoluble matter). Since one cannot specify primary QI and a toluene

insoluble matter with respect to a coat forming carbon material (i.e. the final product following processing with toluene and calcination), the pending claims indirectly specify coat forming carbon material by using the starting material instead.

Based on the foregoing, Applicants submit that the now claimed “starting material” (formerly referred to as “raw material”) is fully supported by the specification and the claims and therefore not indefinite.

In addition, the claims were rejected under 35 U.S.C. §112, second paragraph for reciting “with edge parts of a core carbon material are partially or entirely coated” and “wherein the carbon material is nearly spherical or ellipsoidal”.

Applicants respectfully submit that the terms “edge parts” and “nearly spherical or ellipsoidal” are fully supported and are consistent with common terms one of ordinary skill in the art would readily understand. Specifically, a core carbon material has an edge part or parts. The core carbon material become spherical or ellipsoidal when coated with a coat forming carbon material as claimed.

In view of the foregoing, Applicants respectfully submit that the amendment to the claims overcomes the 35 U.S.C. §112, second paragraph rejections and therefore respectfully request that these rejections be withdrawn.

Claims 1, 3-5, 7, 9-12, 38, 39 and 44-46 were rejected under 35 U.S.C. §102(b)/103(a) as being anticipated by or alternatively unpatentable over Miyabayashi et al., U.S. Patent No. 5,401,598 (hereinafter “Miyabayashi”).

Contrary to the Examiner’s allegation, the present application is not anticipated nor made obvious by Miyabayashi as Miyabayashi fails to teach or suggest the now claimed covering ratio “c” or toluene insolubility matter.

Specifically, in the examples of Miyabayashi, the amount of core carbon material and coat forming carbon material are as follows:

Example	Core Carbon Material	Coat Forming Carbon Material
1	50 wt. Parts	50 wt. Parts
2	53 wt. Parts	47 wt. Parts
3	65 wt. Parts	35 wt. Parts
4	100 wt. Parts	40 wt. Parts

As the amount of coat forming carbon material increases, the core carbon material is covered in even increasing amounts leading to entirely coated carbon material. Further, the performance of batteries using the calcined two-layer carbon material is lowered because of a lower content of core carbon material.

With regard to the present invention as recited in claim 1, the claimed covering ratio c is 0.01-0.2 which leads to a higher content of core carbon material and to higher performances when incorporated into a battery. In contrast, the covering ratio c of Miyabayashi is 0.286 (40/140; example 4) to 0.5 (50/100; example 1).

Toluene insoluble matter "7.8%" is from example 24 of the present specification, and "30%" from examples 1, 7, 9-11, 14-20 and 22. Therefore, 7.8-30% of toluene insoluble matter is supported by the specification.

Furthermore, Miyabayashi fails to teach or suggest the claimed toluene content. According to the present invention, the starting material is tar or pitch having 7.8 to 30.0% of toluene insoluble matter (hereinafter "TIM"). The claimed 7.8 to 30.0% TIM may be provided by washing the coated layer with toluene thereby producing TIM on the surface of core carbon material. In other words, coat forming carbon material is mainly made of TIM. The TIM does not cause fusing and aggregation (see page 21, lines 22-25 of the present specification).

TIM offers advantages over toluene soluble matter as toluene soluble matter become sticky after calcinations, which causes fusing or aggregation. Fused or aggregated particles must be pulverized. When a higher ratio of coat forming carbon material is used, a reactive surface of the core graphite material will not be exposed after pulverization.

With regard to page 7, lines 6-1 from the bottom of the Office Action, example 3 of Miyabayashi is carried out by admixing core carbon material and toluene soluble matter, and then the mixture was calcined to carbonize all of the toluene soluble matter. Therefore, fusing and aggregation cannot be avoided in example 3 of Miyabayashi.

Since Miyabayashi does not disclose the concept of controlling ingredients of coat-forming carbon material by washing the coating layer with toluene, the present invention cannot be created by Miyabayashi.

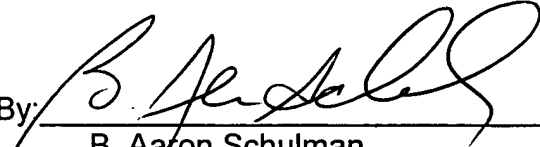
Based on the foregoing discussions, Applicants respectfully submit that the claims are not anticipated nor made obvious from Miyabayashi since Miyabayashi fails to teach or suggest the claimed "c" ratio and the percent of TIM. Therefore, Applicants respectfully request that the rejection to the claims under 35 U.S.C. §102(b)/103(a) be withdrawn.

By this Amendment, Applicants have added new claim 47 based on prior claim 1 (five times amended) and claim 7 and the specification as filed. Therefore, claim 47 does not present new matter. Moreover, claim 47 is clear of the prior art for at least the same reasons as discussed above with regard to the remaining pending claims.

In view of the foregoing, Applicants respectfully submit that the present application is in condition for allowance.

Respectfully submitted,

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ATTACHMENT A Amendments to the Claims

Following herewith is a complete listing of the claims, including a marked copy of the currently amended claims.

1. (Currently Amended) A calcined two-layer carbon material; wherein edge parts of a core graphite ~~carbon~~ material are partially or entirely coated with a coat-forming carbon material formed from a starting ~~whose raw material is of either~~ processed tar from coal, or processed pitch from coal, unprocessed tar from petroleum, or unprocessed pitch from petroleum, the starting material having 3% or less of primary QI and ~~whose the starting raw material have~~ having a toluene insoluble matter of 7.8% to 30%,

wherein the calcined two-layer carbon material is nearly spherical or ellipsoidal, ~~the~~ has no grinding face and the core graphite material has carbon material having a covering ratio c before calcination defined as a weight ratio of coat-forming carbon material/(core ~~carbon-graphite~~ material + coat-forming carbon material) of ~~0 < c ≤ 0.3~~ 0.01 to 0.2.

3. (Currently Amended) The calcined two-layer carbon material according to claim 1 wherein the coat-forming carbon material has a lower crystallinity than the core graphite ~~carbon~~ material.

4. (Currently Amended) The calcined two-layer carbon material according to claim 1 wherein the core graphite ~~carbon~~ material is a carbon material with high

crystallinity having a mean interplanar spacing (d_{002}) of (002) plane of 0.335-0.340 nm, a thickness of crystallite size in direction of (002) plane (L_c) of at least 10 nm, and a thickness of crystallite size in direction of (110) plane (L_a) of at least 10 nm.

5. (Currently Amended) The calcined two-layer carbon material according to claim 1 wherein a true specific gravity of entire carbon material is 1.50 to 2.26g/cm³.

7. (Currently Amended) ~~A~~ The calcined two-layer carbon material of claim 1 ~~characterized in that edge parts of a core carbon material are partially or entirely coated with a coat-forming carbon material, wherein the carbon material is nearly spheric or ellipsoidal, and has no grinding face, wherein the~~ calcined two-layer carbon material has a specific surface area determined by a BET method of 5 m²/g or less ~~and a covering ratio c defined as a weight ratio of coat-forming carbon material/(core carbon material + coat-forming carbon material) of $0 < c \leq 0.3$.~~

9. (Currently Amended) The calcined two-layer carbon material according to claim 7 wherein the ~~coating~~ coat-forming carbon material has a lower crystallinity than the core ~~carbon~~ graphite material.

10. (Currently Amended) The calcined two-layer carbon material according to claim 7 wherein the core ~~carbon~~ graphite material is carbon material with high crystallinity having a mean interplanar spacing (d_{002}) of (002) plane of 0.335-0.340 nm,

a thickness of crystallite size in direction of (002) plane (Lc) of at least 10 nm, and a
thickness of crystallite size in direction of (110) plane (La) of at least 10 nm.

11. (Previously Amended) The calcined two-layer carbon material according to claim 7 wherein a true specific gravity of entire carbon material is 1.50 to 2.26g/cm³.

12. (Previously Amended) The calcined two-layer carbon material according to claim 7 wherein a volume-based integrated value of particles having a diameter of 1 μm or less determined by particle size distribution is 10% or less.

23. (Currently Amended) A method for producing the ~~coated~~calcined two-layer carbon material of claim 1 comprising calcining the ~~coated~~core graphite material coated with the coat-forming carbon material for carbonization.

27. (Currently Amended) A method for producing the ~~coated~~calcined two-layer carbon material of claim 1, wherein a surface of the core graphite coated with the coat-forming carbon material is pretreated for oxidation before calcination of the ~~coated~~core graphite coated with the coat-forming carbon material.

38. (Currently Amended) The calcined two-layer carbon material according to claim 1 wherein the calcined two-layer carbon material is produced by washing ~~a~~the ~~core carbon-graphite~~ material coated with ~~a~~the coat-forming carbon material.

39. (Currently Amended) The calcined two-layer carbon material according to claim 7 wherein the calcined two-layer carbon material is produced by washing ~~a~~the ~~core carbon-graphite~~ material coated with ~~a~~the coat-forming carbon material before calcination.

41. (Currently Amended) A method for producing a coated carbon material comprising calcining for carbonization at a heating rate of up to 10°C/hr a carbon material wherein edge parts of a core carbon material are partially or entirely coated with the coat-forming carbon material ~~whose~~formed from a starting raw-material is of either processed tar from coal, or processed pitch from coal, unprocessed tar from petroleum or unprocessed pitch from petroleum, the starting material having 3% or less of primary QI and ~~whose~~the starting raw-material have a toluene insoluble matter of 7.8% to 30%, and wherein the coated carbon material is nearly spherical or ellipsoidal.

42. (Previously added) A method for producing a coated carbon material comprising washing a carbon core material coated with tar or pitch using a toluene solution and calcining for carbonization in vacuo a carbon material wherein edge parts of a core carbon material are partially or entirely coated with the coat-forming carbon material and wherein the carbon material is nearly spherical or ellipsoidal.

43. (Currently Amended) A method for producing a coated carbon material comprising calcining for graphitization a carbon material wherein edge parts of a core carbon material are partially or entirely coated with the coat-forming carbon material

~~whose~~ formed from a starting raw-material is of either processed tar from coal, or processed pitch from coal, unprocessed tar from petroleum, or unprocessed pitch from petroleum, the starting material having 3% or less of primary QI and ~~whose~~ the starting raw-material have ~~having~~ a toluene insoluble matter of 7.8% to 30%, and wherein the coated carbon material is nearly spherical or ellipsoidal.

44. Canceled.

45. (Previously Added) The carbon material according to claim 1, wherein a volume-based integrated value of particles having a diameter of 1 μm or less determined by particle size distribution is 10% or less.

46. Canceled.

47. (New) A calcined two-layer carbon material having edge parts of a core graphite material which is partially or entirely coated with a coat-forming carbon material, the coat-forming carbon material formed from a starting material, the starting material being either processed tar from coal, processed pitch from coal, unprocessed tar from petroleum or unprocessed pitch from petroleum, the starting material having a 3% or less of primary QI and a toluene insoluble matter of 7.8% to 30%,

the calcined two-layer carbon material prepared by:

coating the core graphite material with the starting material to form coated core graphite material,

washing the coated core graphite material with toluene forming washed core graphite material, and

calcining the washed core graphite material,

wherein a covering ratio c before calcinations defined as a weight ratio of coat-forming carbon material/(core graphite material + coat-forming carbon material) ranges from 0.01 to 0.2, and

the calcined two-layer carbon material is nearly spherical or ellipsoidal and has no grinding face.